CIA FIVE YEAR ADP PLAN

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...."the next thirty-three years may well be known as the age
of electronics, computers, automation, cybernation, data processing,
or some related idea".

"This whole area is currently about the most dynamic and volatile
of our technologies. As a result, when one specialist declares that 'the
computer gives signs of becoming the contemporary counterpart of the
steam engine that brought on the industrial revolution', and another argues
that the computer represents, 'an advance in man's thinking process as
radical as the invention of writing', one is not irritated by the grandiosity
of the claim, but only by what has become its obviousness. The capacity
of the computer ultimately to effect a dramatic extension of man's power
over his environment, as well as many other social and economic changes,
by now obvious to all."

"....the computer can be viewed as the most basic tool of the last
of the twentieth century". *

*Herman Kahn, Director, Hudson Institute and Anthony Wiener,
"The Year 2000", The Macmillan Company, New York, 1967.

SUMMARY

A. PURPOSE AND SCOPE

The Agency five-year ADP plan is the first step in creating the comprehensive program needed for Agency ADP management, operations and development. As such, this plan contains the first comprehensive fact finding survey of the present status and trends in ADP, for the Agency, as a whole. Major recommendations include the formulation of an explicit ADP program within a modified Agency program structure, and the adoption of improved procedures for ADP project approval, reporting and management, as subsequent steps.

This plan and its recommendations are responsive to the directive of the President's memorandum of June 28, 1966, which states in part:

"I want the head of every Federal Agency to explore and apply all possible means to
--Use the electronic computer to do a better job
--Manage computer activity at the lowest possible cost.

I want my administration to give priority emphasis to both of these objectives -- nothing less will suffice.

The electronic computer is having a greater impact on what the Government does and how it does it than any other product of modern technology.

Clearly, we must devote our best efforts to managing this large investment wisely and with the least cost."

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B. PRINCIPAL FINDINGS

The impact, trends and importance of ADP in the Agency are suggested by the following major findings:

Magnitude of ADP Activity

FY-1968

25X1A

25X9

[   ] annual cost
[   ] ADP personnel
5% of total Agency & Budget
5% of Agency manpower
45 computers, equivalent to 7 IBM 360/65's
    in processing capacity

FY-1973 (Projected)

25X1A

25X9

[   ] annual cost
[   ] ADP personnel
8% of total Agency & Budget
8% of Agency personnel
20 IBM 360/65 equivalents in processing capacity

FY-1980 (Projected)

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[   ] annual cost

Growth Rate

1964-1968

30% Annual increase in $ cost
15% Annual increase in ADP personnel
60% Annual increase in computer capacity

1969-1973 (Projected)

11% Annual increase in $ cost
 9% Annual increase in ADP personnel
25% Annual increase in computer capacity

Major ADP Systems

A partial list of major new and expanded ADP systems planned for development and operation during the period 1969-1973 includes the following:

o NPIC Integrated Information System (IIS)

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o DD/S Support Information System (SIPS)

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o RID Central Retrieval System

25X1

o OC Automated Communications

25X1

o OCS Central ADP Services

25X1

o ORD ADP Research Development and Engineering

25X1

Complexity

ADP is inherently complex, both organizationally and technically. Individual ADP projects frequently involve several different offices, directorates, or other agencies, and cut across normal organizational lines. In these circumstances, the project form of organization and management rather than routine line organization or loose coordination, is frequently required. The technical complexity necessitates a great amount of detailed planning and analysis to select optimum methods of system development, and ensure cost-effective implementation and useable results. There are many risks which can jeopardize the effectiveness and economy of major ADP projects and these can be minimized only by detailed planning and analysis. For these reasons, ADP projects warrant elaborate planning and intensive management attention.

Essentiality of ADP

Many important Agency tasks such as certain collection, image processing, communications, and foreign missile and space analysis, are aboslutely dependent upon ADP for their accomplishment. For other tasks, ADP contributes timeliness, accuracy or economy. In fact, there is hardly an office, program or project in the Agency, to which ADP does not make a direct contribution. Currently and in the future ADP represents the single most potent and pervasive means for improving intelligence collection, processing and production; for economically performing administrative and support tasks; and for improving management information and control. Further, the Agency's competitive advantage over hostile intelligence services will be increasingly influenced by our effectiveness in exploiting ADP techniques.

C. GROWTH OF ADP

Very rapid growth is a principal characteristic of ADP, in the Agency, the government and the nation. Total Agency ADP activity has grown about 30% annually, between 1964 and 1968, as shown in Figure 1, opposite. Within the U.S. Government, for the same period, growth has been about the same as for the Agency and for the entire nation it has been approximately 45% annually.

This growth rate is the direct consequence of ADP being the most effective solution to many rapidly expanding problems, such as the "information explosion," the control of world-wide activities, increasing technical complexity, and administrative functions.

The success of modern collection systems and the vast volumes of data which they acquire, alone place a huge burden on the Agency's information processing capabilities. Without the timely and accurate processing of this data into useable intelligence, the collection system alone has little value. New collection systems will further expand the volume and improve the timeliness of information. Expanded and improved ADP offers the only feasible means of performing this essential processing.

In Section F a more explicit projection of planned future ADP development and growth are presented for the period 1969-1973.

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D. ADP PLANNING ASSUMPTIONS

On the basis of Current trends, estimated future requirements and planned developments, the following observations, projections and conclusions about future Agency ADP (FY-1969 - 1973) can reasonably be made.

The President, Congress and the Bureau of the Budget will continue to press for wider application, greater efficiency, and economy in the utilization of ADP resources and for demonstration of improvements and accomplishments in ADP management. The trend toward development of large-scale and complex intra and inter-Agency systems (COINS, TOD, etc.) will continue and accelerate. There will be increased emphasis on managing, planning, and reporting ADP activity.

The ADP state-of-the-art capabilities available in 1969 - 1973 will permit significant improvements in the effectiveness of intelligence collection, dissemination, retrieval, processing, and production. It will permit economies in many administrative tasks, and it will make possible major improvements in management information and control methods. The availability of these improved capabilities will result in strong pressures to utilize them. Some of the Agency's difficult problems in information processing will be eased by the use of ADP systems, but operation of the new system will itself create difficult new technical and managerial problems.

The Agency's and Community's future success in performing its mission and the extent of its competitive advantage over hostile intelligence services will be increasingly influenced by our effectiveness in exploiting advanced ADP techniques, in collection and counterintelligence activity as well as intelligence production.

During the period 1969 - 1973 total Agency ADP costs and manpower will increase about 11% annually. These increases will result both from greater utilization of ADP for new tasks and from substitution of ADP for less efficient manual processes. Partially compensatory reductions in cost and manpower of non-ADP activities will be expected.

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The increased use of ADP systems will present complex problems in recruiting, training and re-training personnel (including the users), and in developing, operating and managing the systems. Most of these systems require long lead-time and <u>careful attention to project management and technical detail.</u>

AGENCY ADP OBJECTIVES

An Agency ADP Program

In the past, the magnitude of the Agency's ADP activity has
not justified the establishment of an ADP program and currently
the Agency does not have a comprehensive and integrated ADP
program to facilitate identification and management of our ADP
activity. Only one-third of our ADP, the cost of the Office of
Computer Services, is readily identifiable in the Information
Processing and Exploitation program category. The remaining
two-thirds is obscured as a part of Collection, Production,
Support, R&D and other programs.

The magnitude, importance and complexity of current and
future ADP activity require at least periodic review of an integrated
ADP program and sustained attention to its management. This plan
is the basis for developing such a program.

Qualitative and Substantive ADP Objectives

The objectives of the Agency's program constitute the ADP
capabilities essential to the accomplishment of vital Agency tasks.
These objectives are both qualitative and substantive in nature. The
qualitative objectives apply to every substantive objective and include
improvement of cost-effectivenss, timeliness, accuracy, or economy.
The substantive objectives relate to the specific functional need or
capability to be accomplished.

Agency ADP objectives include those for which explicit programs
and projects are well established and operational, others whose
implementing programs and projects are under development, and
some whose ADP implementation is in the planning stage. While
this does not affect the validity of the objective, it does make a
great difference in the amount of current and future, activity and
resources devoted to its accomplishment.

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Qualitative ADP Objectives

o Cost-effectiveness
o Timeliness
o Completeness and accuracy
o Economy

Substantive ADP Objectives

o Central ADP services to provide essential ADP for
which dedicated or special systems are not suitable
   (OCS Systems)

o ADP required by OSA and OSP Systems

o ADP capabilities to improve the efficiency of
imagery exploitation
   (NPIC ADP and Integrated Information System)

o Use of computers to efficiently provide the higher
speed and larger volume required by the CIA
communications network.
   (Message Automatic Exchange (MAX)
   (Automatic Routing Line Segregator (ARLS)
   (Cable Secretariat/Signal Center Automation)

o Computer based document control and biographic
intelligence processing needed for clandestine
operations.
   (RID Central Retrieval System)

o Development of a system to display the allocation
of intelligence resources by geo-political target
areas and subject matter.
   (Target Oriented Display (TOD))

o Analysis of missile and space activity by the use
of ADP methods.
   (FMSAC systems)

o An ADP system to provide more effective and
integrated processing for all support functions.
   (Support Information Processing System (SIPS))

o   Development of a Program Budgeting Information
    System using ADP.
        (Program Budgeting Information System
            (PBIS) in study stage)

o   An improved central document and information storage
    and retrieval system, with on-line remote query
    stations.
        (CRS CHIVE)

o   Computer assisted collection and processing of
    ELINT data.
        (OEL Systems)

o   Development of a community on-line intelligence
    system to facilitate the exchange of information
    within the intelligence community.
        (Community On-Line Intelligence Systems (COINS))

o   Computer driven plotter and graphic display facilities
    to improve map production and analysis.
        (OSI processing)

o   ADP for specialized libraries for intelligence
    reference.
        (CRS project)

o   Automated dissemination of information received in
    machine-readable form.
        (CRS project)

o   Research and development of new ADP techniques for
    application to intelligence collection, processing and
    production problems.
        (ORD and IPRD Lab)

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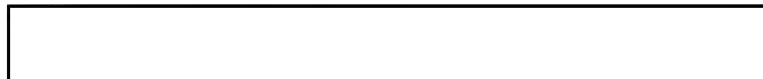
Priorities

Only an approximate order of priority should be implied for
the above list of objectives. It is really not possible to rank ADP
objectives except in terms of the specific projects by which they
are implemented.

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Projects rather than objectives contain the specificity required for ranking (feasibility, schedule, need, benefit, cost). Accordingly priorities apply directly to specific projects, and only indirectly to the objectives while they support.

A meaningful order of priorities must reflect more than the need, benefit, value or urgency of a project. It must also consider its feasibility and resource cost. Accordingly, priorities should be based on the ratio of benefit to cost or the relative cost effectiveness of individual projects. Since it is impossible to quantify some kinds of benefits, both quantitative and qualitative judgments are needed to determine priorities. The basis for rational priority is still the ratio of benefits to cost, even when benefits are mainly qualitative or are dominated by urgent national security needs.

It should not be implied that a top priority project has first claim on all resources, for its priority ranking was based on estimated benefit and cost. For any given project, it can be of high priority that a minimum level of ADP resource be applied but of marginal benefit to apply resources beyond that level. Similarly, project priorities are not based on the mere magnitude or importance of a project. A small project can have a very high benefit to cost ratio and therefore warrant a high priority.

ADP project priorities are primarily a reflection of the estimated need, benefits, value, feasibility and urgency of a project, relative to its cost. ADP projects have been grouped in three classes of priority:

o <u>Top priority</u> - Highest ratio of benefit to cost, and
        absolutely essential to the Agency's mission.

o <u>Moderate priority</u> - Moderate ratio of benefit to cost,
        and valuable to the Agency's mission.

o <u>Marginal priority</u> - Marginal ratio of benefit to cost,
        and useful to the Agency's mission.

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Major Agency ADP Projects, by Priority

Top Priority (Essential)

o Major OCS Systems
o OSA and OSP Systems
o NPIC Integrated Information System (IIS)
o Message Automatic Exchange (MAX)
o Automatic Routing Line Secregator (ARLS)
o RID Central Retrieval System
o FMSAC Systems
o Signal Center Automation
o Support Information Processing System (SIPS)
o OEL ELINT processing system
o Security name check processing (SANCA)

Moderate Priority (Valuable)

o Program Budgeting Information System (PBIS)
o CRS document and information storage and retrieval
      system, (CHIVE) revised
o OEL ELINT collection systems
o Target Oriented Display (TOD)
o OSI Intelligence Processing
o OBGI plotting system
o OPS automated printing (EPIC)
o Community on-line intelligence system (COINS)

Marginal Priority (Useful)

o CRS automation of specialized libraries for intelligence
      reference
o OBGI graphic display system
o CRS automated dissemination of information received
      in machine-readable form
o ORD and IPRD laboratory ADP research and development
      projects

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o Cable Secretariat Automation

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F.   PROJECTIONS FOR THE FUTURE ... FY 1969 - 1973

ESTIMATED RESOURCE REQUIREMENTS

A comprehensive picture of Agency ADP resource requirements
for the period 1964 to 1973 is shown in Figures 2 and 3.

For FY-1968 ADP expenditures represent:

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5% of the Agency dollar budget
5% of Agency personnel

For FY-1973 ADP expenditures are expected to increase to:

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8% of the Agency dollar budget
8% of Agency personnel

Directorate Planning Estimates for 1970 and beyond are often
underestimated because there is at best uncertain knowledge of the
rate at which components of the technology will become available.
The budget cycle now forces serious commitments and planning for
FY-68 and 69. There is a tendency to omit probable projects (for
1970 and beyond) which are as yet unclear in magnitude or eventual
implementation. And there is yet time to request funds and personnel
for projects to be initiated in 1970 and beyond. Smaller estimates of
ADP costs are less alarming and more favorably received by Agency
management. Unfortunately, it has been easier to gain approval for
new projects by initially underestimating them and then raising the
ante-after commitments have been made and resources expended.

On the accompanying Figures 2 and 3, a straight line projection
of the 1964 to 1968 experience has been made based on the actual
annual rates of increase observed. This projection may exceed
expenditure levels which should be anticipated for 1970 - 73 but by
no more than the Directorate estimates are likely to be understated.

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More rigorous management control of ADP development could eliminate those ADP projects whose value was unclear or marginal and improve the efficiency of planning, development and operation of others. Such a tight management control might achieve a reduction in ADP expenditures of as much as 10% from what they would otherwise be, without significant loss to over-all Agency objectives.

Such steps are not readily achieved. Because of the complexities of ADP, tight management control requires the most detailed, comprehensive, and long range planning of individual projects, and careful scrutiny and review of ADP activity by line management within well defined guidelines.

If the projected increases seem large, this is the nature of the ADP problem. The information problems for which ADP is the only visible solution are themselves formidable. The volume of information which requires processing more than doubles every 5 years. To cope with that problem, ADP capabilities must increase commensurately.

The cost and manpower projections shown are based upon and consistent with past observations and are compatible with expert projections within the field in comparable institutions.

The Directorate's Planning Estimates show an approximate leveling of dollar cost and personnel beginning in 1970 (an average annual increase of 3% for both personnel and dollars, 1970 to 1973). It is anticipated that this leveling-off will not occur and that the ADP resource costs for this period will approximate the projection shown.

Average annual rates of increase in ADP costs are thus expected to decelerate from the 30% rate, which prevailed from 1964 to 1968, to an expected 11% average annual increase from 1969 to 1973. Similarly, average annual rates of increase in ADP personnel are expected to decelerate from the 15% rate, which prevailed during 1959 - 1968, to an expected 9% average annual increase from 1969 to 1973.

By 1980, these annual rates of increase could be expected to diminish further to perhaps a 5% annual rate of increase.

Past increases in ADP resources have mainly been achieved by net additions to total Agency resources and only to a smaller degree by compensatory reductions or shifts in allocation of resources. In the future, more of the transitions will have been completed and compensatory reductions realized. This will lessen the effects on total Agency resources of annual ADP increases but not eliminate them, completely.

will

It is emphasized that the future projections presented here are all
subject to management control and can be effected at the levels which
Agency policy, requirements and circumstances dictate.

G. ALTERNATIVES FOR THE FUTURE

Kinds of Alternatives

The Agency's alternatives for future ADP activities and developments involve three major factors, subject to management control:

- o WHAT we do
      (selection of objectives to be implemented)
- o HOW we do it
      (cost-effective project implementation)
- o LEVEL of activity to be performed
      (the optimum level of resource and capability
      for each project, neither "over-kill" nor
      "under-kill")

An optimized Agency ADP program combines the optimum WHAT, HOW and LEVEL for individual objectives and projects. It incorporates only those projects which are justified by their contribution to Agency tasks at specified resource and capability levels. Major alternatives within such a program are the projects to be included, the resource levels at which the projects will operate, and the efficiency with which they are operated.

Constraints

Future Agency ADP activity is constrained by several factors over which management has only limited influence. These include:

- o The magnitude of total Agency resources
- o Feasibility limitations of ADP state-of-the-art
- o Mandatory requirement for certain ADP activity
- o Critical dependence on ADP for many Agency tasks

Alternative ADP Program Packages

The projections of future ADP resource requirements shown in figure 4, page 21, are an estimate of the optimum future ADP program, based on analysis of the above considerations. It is also consistent with a projection of observed past trends in Agency ADP.

Three alternative ADP program packages have been generated for the period 1969 - 1973. These represent different funding levels for selected ADP projects, and different combinations of projects. The packages are shown in fugure 5.

The "full" program includes all top and moderate priority projects, and several marginal priority projects, funded at levels for full development and operation. It is a selective list rather than a list of everything conceivable or desirable.

The "optimum" package is more selective and constrained. It eliminates one marginal project and reduces the capability and resource level of other selected projects. It represents an approach to an optimum cost-effectiveness package.

The "austerity" package is drastically limited by budgetary constraints. It represents a minimum essential program with serious sacrifices of important capabilities. It is not a very cost-effective package because it limits some projects to less thanoptimum levels and because it would cause a shift of some costs to other means, both more expensive and less effective.

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There are an infinite variety of other alternatives which could be formed from different combinations of projects and resource levels. The three alternatives presented are meaningful packages which cover a resource variation of plus and minus about 17% [   ] over the five year period.

The "optimum" program is the recommended package. It accomplishes the important ADP tasks at cost-effective levels. The "full" program provides more flexibility than current budgetary restraints warrant and the "austerity" package sacrifices too much essential capability.

The above alternatives consider mainly WHAT tasks should be accomplished and the appropriate resource and capability LEVELS. Of even greater importance is HOW they should be performed, the cost-effectiveness and methods of development and operation of individual projects. Improvements in the efficiency and economy of performing ADP tasks may represent the greatest area of opportunity for improving the Agency's total ADP program. This is a complex problem with no simple or easy solutions, and it is mainly dependent upon the amount and quality of management attention which ADP receives.

Major Agency ADP Projects, by Priority

Full Program

Top Priority (Essential)

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- o Major OCS Systems (plus [   ] included in items below)
- o OSA and OSP Systems
- o NPIC ADP and Integrated Information System (IIS)
- o Message Automatic Exchange (MAX) and Automatic Routing Line Segregator (ARLS)
- o CRS document storage and retrieval
- o CRS (CHIVE) information storage and retreival
- o RID Central Retrieval System
- o FMSAC Systems
- o Signal Center Automation
- o Support Information Processing System (SIPS)
- o OEL ELINT processing system
- o Security Automated Name Check (SANCA)
- o Other high priority projects

Sub Total

Moderate Priority (Valuable)

OL/PSD

- o OCS Time Sharing System
- o OEL ELINT collection systems
- o Target Oriented Display(TOD)
- o OSI intelligence processing
- o OBGI plotting and graphic system
- o OPS automated printing (EPIC)
- o Community on-line Intelligence System (COINS)
- o Other moderate priority projects

Sub Total

Marginal Priority (Useful)

- o Automated dissemination of information received in machine-readable form
- o Program Budgeting Information System (PBIS)
- o ORD and IPRD laboratory ADP research and development projects

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- o Cable Secretariat Automation
- o Other marginal priority projects collectively

Sub Total

Grand Total

Figure 4

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H. RECOMMENDATIONS

Discussion

The Agency's ADP activities are large scale and growing. The Agency's future success in performing its mission will be increasingly dependent upon capabilities which only ADP can provide. These are commanding reasons for expending the efforts necessary to improve the Agency's use and management of ADP.

Although we have much cause for pride in our ADP accomplishments, opportunities for improvement will only be revealed by a critical search for limitations, problems and difficulties. It is our shortcomings, more than our successes, which provide opportunities and warrant attention.

This ADP plan has concentrated on the WHAT, the objectives of Agency ADP projects. To a lesser extent it has considered optimum LEVELS and apportionment of ADP development, capabilities and resources. It has deferred discussion of the HOW of ADP projects, the attainment of maximum efficiency, economy and effectiveness in the actual implementation and operation of these projects. Yet this latter point offers our greatest opportunities for improvement.

Our selection of ADP goals and objectives has always been excellent, but our actual performance in attaining those objectives has sometimes been poor and uneconomical. The cost of poor project implementation is both a waste of resources and the loss of a needed capability.

Improvement in actual project performance and implementation is difficult and complex. It first requires recognition that serious deficiencies do exist, coupled with a strong determination to take the difficult but essential corrective measures. The corrections consist of:

- o Greater attention to ADP by senior management
- o More critical and demanding management decisions on new ADP projects, and periodic progress reviews of continuing projects
- o Greater internal illumination of Agency ADP activity
- o Increased use of systematic methods for project management including competitive procurements and fixed price contracts

Accomplishment of these improvements in ADP implementation is the proper function of an explicit Agency ADP program and a major recommendation of this plan.

Specific Recommendations

The following recommendations are submitted for approval:

a. That the resource levels and project priorities of the
    "optimum" five-year ADP program be approved for
    planning purposes, subject to annual review in the
    planning, programming and budget cycle.
    (Figure 4 and 5, pages 21 and 22)

b. That an open and explicit approach in which objectives,
    alternatives and milestones are clearly defined, and assump-
    tions, calculations, costs and judgments are laid bare, be
    applied to all aspects of Agency ADP, by line managers at
    every level.

c. That the management of Agency ADP be enhanced by
    adoption of more exacting project approval and progress
    reporting procedures, to be established by the Executive
    Director-Comptroller.

d. That the implementation of Agency ADP projects be improved
    by the increased use of systematic project management
    procedures, including competitive procurements and fixed
    price contracts, as directed by the Executive Director-Comptroller.

e. That an explicit and detailed Agency ADP program be
    developed, within a modified Agency program structure,
    by the Director of Planning, Programming, and Budgeting.

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B. Planned ADP by Directorate, Office and Major Projects

This section describes the ADP operations and development planned for the period FY 1969 - 1973. For each Directorate the requirements, objectives, major ADP projects, their current status, planned development and resource requirements are presented.

The magnitude of planned ADP activity is indicated by Figures 11 through 14 which show the dollars and personnel needed to accomplish the plans of each Directorate and the future trend of these resource requirements.

For the years 1970 - 1973, two separate levels are shown:

○ An estimate prepared by each Directorate
○ A projection based on past growth rates and future trends

Without exception the Directorate estimates show a leveling off or decline of ADP costs for 1970 to 1973. This is manifestly suspect in view of past and current growth trends in ADP costs and identified future ADP commitments and requirements. As shown in Figures 11 through 14, Directorate ADP expenditures increased between 14% and 40% annually for the period 1964 to 1968. For 1970 to 1973 they are expected to increase between 8% and 14%. There is no reason to expect them to suddenly level off in 1969 or 1970 and remain level through 1973. The planned projects, known ADP requirements and demonstrated trends for 1970 - 1973 provide ample reason for expecting continued increase in ADP costs.

The ADP plans of the individual Directorates follow.

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Intelligence Directorate

The ADP objective of the Intelligence Directorate is to extend the productive capacity of available resources by the use of demonstrably cost-effective ADP applications. Specific objectives include:

- To provide an improved central document and information storage and retrieval system, with remote query stations, to meet Agency needs.

- To improve the efficiency of imagery exploitation

- To provide automated dissemination *of information reaching the Agency in machine-readable form.*

- To provide a computer-driven plotter to expedite map production and graphic display facilities to support analysis

- To utilize a variety of ADP applications in support of specialized libraries for intelligence reference

These objectives correspond to the current and future ADP requirements of the Intelligence Directorate including a number of small tasks of varying significance and two very large collective requirements of major importance:

- The imagery exploitation requirement for NPIC to meet the commitments of the National Tasking Plan at minimum cost and to provide precise dimensional intelligence, of improved quality and timeliness, and greater volume is feasible only with automatic data processing.

- The requirements for CRS to provide improved and economical systems for storage and retrieval of information and documents. (ADP dependent)

The cost of the total DD/I ADP effort for the period 1969 - 1973 is projected at [   ] and [   ] man years. To this must be added approximately [   ] of OCS resources used by offices of DD/I. Use of ADP resources by Intelligence Directorate and Offices for FY 1968 are shown in Figure II, following.

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The DD/I ADP plan accomplishes the above objectives and require-
ments by means of a large number of small computational and information
storage and retrieval applications and three major projects:

o The NPIC Integrated Information System (IIS), encompasses
the major NPIC ADP activity. This project includes
operating systems, photogrammetric support information
and document storage and retrieval, and report generation.
It provides the ADP support essential to imagery exploitation.
This IIS will permit NPIC to process the very large volume of
imagery scheduled for collection during the planning period.
Phase II of the project, system design, has recently been
completed. Portions of the IIS are scheduled to be operational
by the end of FY 1968, 1970 and 1971. The entire IIS capability
should be operational by 1973.

o CRS project CHIVE is a large scale document and infor-
mation storage and retrieval system, using off-line and
eventual partial on-line input and retrieval. The CHIVE
project has recently been modified to provide a limited
operational test of the full concept for China during
FY 1968 - 69. The modified CHIVE system employing
a shallow document index system, a CRS reorganized on
a regional—functional basis, and an emphasis on servicing
document and information requests rather than system
input has become operational during FY 1968. The
generalized computer programs designed for CHIVE
will also serve a wide variety of information storage
and retrieval activities OCS must support throughout
the Agency.

o CRS Document Retrieval Support provides document
storage and retrieval services, covering material
supplementary to and not included in CHIVE, currently
consisting of 60 million records. During the period
1969 - 1973 the present system will be modified by
selective conversion of files from EAM equipment and
forms to computer equipment and storage.

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Support Directorate

The major ADP objective of the Support Directorate is to provide a more effective, comprehensive and integrated use of ADP in satisfying the information processing requirements for all Support functions. Studies performed in 1964 revealed that the existing information processing methods were neither efficient nor did they adequately satisfy requirements. Each separate system was designed unto itself with little communication to related systems and a needless redundancy of files and processing. The computers processing these files were also obsolete, and their replacement required reprogramming of existing applications.

DD/S requirements can be most efficiently met by an integrated system encompassing the information processing of all Support functional areas. The Support Information Processing System (SIPS) is being developed to accomplish this objective. It will replace existing separate information systems as it becomes operational. Full operational capability will be achieved in FY 1970 or later.

25X1A   The development cost of SIPS for the period 1969 to 1973 is estimated at approximately [   ] of resources provided by OCS and the remainder by DD/S. Personnel requirements for 1969 to 1973 total 279 man years. OCS will provide 76 man years and DD/S (including OC) the remainder.

The need for the renovation is clear. Deferral of SIPS means doing the same tasks less effectively and less economically. The alternatives are in the rate of development and the efficiency with which the project is performed. The current schedule seeks an optimum match of deliberate speed and orderly progress.

A second major ADP objective of the Support Directorate is the selective improvement of the CIA communications network to meet the higher-speed and larger-volume requirements of the next ten years. The volume of Agency electronic communications is expected to double in the next 5 to 7 years. The use of computers and ADP techniques in automated communications systems is the most economic means of providing the increased capacity required. The alternative of utilizing increased manpower would be considerably more expensive, less reliable, and produce slower communications.

Use of ADP resources for the Support Directorate are shown in Figure 16.

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The use of ADP to augment communications systems will cost approximately [ ] for the period FY 1969 - 1973 (exclusive of SIPS communications, costed under SIPS) and will require an average of 53 persons per year for maintenance and operation of automation equipment.

Four major projects subsume the major ADP requirements of the Support Directorate:

- Support Information Processing System (SIPS), an integrated ADP system to satisfy the accounting, reporting, and record keeping requirements of all the functions and offices of the Support Directorate. The system will provide improved accountability for people, money and materiel. It is presently in design and coordination phase. Implementation of final sub-system is projected for 1970 or 1971.

- Message Automatic Exchange Program (MAX) is an on-line, computer-controlled, real-time message handling system for major relay points. It improves speed, reliability, efficiency, and capacity of the network and permits control and limitation of manpower requirements. MAX I became operational at [ ] in 1965. MAX II and MAX III are scheduled for Headquarters [ ] in May and January 1969. Ultimately, systems are planned at seven locations, with a useful life of 8 - 10 years.

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- Automated Routing Line Segregator (ARLS) is an off-line, computer-controlled system to expedite multiple-addressee messages through small and medium sized relay stations. Similar but subordinate to MAX, these two systems accommodate greater traffic volume, without personnel increases. First ARLS installed at [ ] Station in FY 1968, with seven additional installations planned. Useful life is 8 - 10 years.

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- Cable Secretariat/Signal Center Automation is to be provided by a computer assisted system for message processing, reproduction and distribution. It will expedite message delivery, reduce personnel and reduce copy requirements. Initial increments will begin operation in FY 1968 and system completion in FY 1973.

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The DD/S&T ADP plan will accomplish these objectives and requirements by means of the following major projects and activities:

- The OCS central ADP facility is the largest ADP resource in the Agency. It represents 35% of total Agency ADP costs and 29% of total Agency ADP personnel. Its function is to provide ADP services for all users in the Agency requiring such facilities. This centralization of a part of the Agency's ADP facilities and skills provides more effective and economical use of equipment and skills where individual components have diverse and limited computer applications which cannot fully employ systems dedicated to their exclusive use. To discharge this function, OCS has developed the operating systems needed to process scientific data, administrative (support) data and intelligence information.

  The ADP facilities of OCS are an essential step in performing Agency tasks rather than an end in themselves. Although OCS resources are allocated under the program sub-category of central ADP services, these resources are used to support every major Agency activity. See Figures 8 and 15 through 18.

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  The BOB decision to provide [   ] for OCS equipment purchases in FY 1968 resulted in larger than normal hardware costs for the year. Although this will reduce future costs, it is likely that expanding requirements, new applications, major software revisions, and planned additional personnel

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  will require OCS average annual expenditures of about [   ] per year for the period 1969 - 1973.

Major OCS system projects include:

o Completion of transition to third generation computers.

o Major participation in development of SIPS, CHIVE,
   and COINS

o Development of improved computer operating systems

o New applications

The allocation and utilization of OCS resources by Directorate for 1968
are approximately as follows:.

	$'s	%	Man years	%
DCI, Staff		2%		2%
DDS		32%		35%
DDI		17%		17%
DDS&T		47%		45%
DDP		2%		1%
		100%		100%

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25X1A The [   ] from BOB plus [   ] of Agency funds for larger   25X1A
than normal hardware purchases in FY 1968 has the effect of making the
above costs appear temporarily larger than they otherwise would be.

Other major DDS&T projects are as follows:

o ADP Control of ELINT Collection is a project to improve
   effectiveness and reduce manpower requirements for field
   ELINT collection systems. Currently, a small PDP-8
   computer is used. Design studies have been completed
   for a system to improve collection effectiveness, and an
   25X1A   [   ] implementation contract is being negotiated.
   25X1A   For 1969 to 1973 costs will approximate [   ].

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III. APPENDICES

APPENDIX A

APPENDICES

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Appendix B

Program Category Analysis

Column A of Figure 20 shows the ADP resource expenditure by office for Program categories and sub-categories. The resources in Column A are only those provided by the office indicated and do not include OCS or RID resources used by the office. Most of the categories represent a meaningful end-item functional purpose. However, the Central ADP Services category simply represents the summation of all OCS expenditures, plus the hardware costs of RID, without any indication of the end purpose or result for which resources were expended or the projects and offices supported. In order to show the end purposes and uses made of these OCS and RID resources, they have been re-allocated to the program categories for which they were ultimately expended and the office which utilized them. These re-apportioned amounts are shown in Column B, and their totals are indicated by (). Column C then represents the total ADP expenditure per program category and sub-category.

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APPENDIX C

Comparison with ADP at the University of California

One way of assessing and evaluating the reasonableness of projections of future Agency ADP development is to make comparisons with analogous institutions. Such comparisons are not precise and their accuracy is limited, but they can provide an approximate and general cross-check of trends, magnitudes and levels.

At the initiative of Mr. Charles J. Hitch, Vice President for Administration, a detailed study of ADP at the University of California was made in October 1966 by the Management Analysis Center, Inc. of Cambridge, Mass. (associated with Harvard University).

The U. of C. has total annual expenditures of $729 million for FY 1967. It operates 9 campuses located throughout the state, with 24 separate ADP facilities. Its computational activities span the full range from advanced scientific computing to information processing, to administrative applications, similar to those of the Agency. The record of past ADP development, magnitude of current activity, ADP problems, and future requirements are all quite similar to the Agency's.

The principal findings of the study on probable future requirements and growth of ADP at the U. of C. are shown in Figure 14 and compared with the findings of the Agency 5 Year ADP Plan. The U. of C. projected growth rate far exceeds the rate projected for the Agency and suggests that the Agency projections are not excessively high. To the contrary, the comparison suggests that the Agency projection may tend toward underestimating future ADP levels.

What is important in these estimates is not so much the projected numerical values of future costs of computation, as the fact that the <u>costs and magnitude will undoubtedly be large and represent a rapid rate of growth.</u>

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